WHAT IS CLAIMED IS:

1. A siloxane resin composition comprising $R^1SiO_{3/2}$ siloxane units and $(R^2O)_bSiO_{(4-b)/2}$ siloxane units wherein R^1 is independently selected from the group consisting of alkyl having 1 to 5 carbon atoms, R^2 is independently selected from the group consisting of branched alkyl groups having 3 to 30 carbon atoms and branched substituted alkyl groups having 3 to 30 carbon atoms, b is from 1 to 3, the siloxane resin contains a molar ratio of $R^1SiO_{3/2}$ units to $(R^2O)_bSiO_{(4-b)/2}$ units of 1:99 to 99:1 and the sum of $R^1SiO_{3/2}$ units and $(R^2O)_bSiO_{(4-b)/2}$ units is at least 50 percent of the total siloxane units in the resin composition.

2. The siloxane resin composition as claimed in claim 1, wherein the molar ratio of $R^1SiO_{3/2}$ units to $(R^2O)_bSiO_{(4-b)/2}$ units is 40:60 to 98:2 and the sum of $R^1SiO_{3/2}$ units and $(R^2O)_bSiO_{(4-b)/2}$ units is at least 70 percent of the total siloxane units in the siloxane resin composition.

3. The siloxane resin composition as claimed in claim 1, wherein R^1 is methyl and R^2 is a tertiary alkyl having 4 to 18 carbon atoms.

4. The siloxane resin composition as claimed in claim 1, wherein R^2 is t-butyl.

5. A method for preparing a siloxane resin comprising $R^1SiO_{3/2}$ siloxane units and $(R^2O)_bSiO_{(4-b)/2}$ siloxane units where b is from 1 to 3, which comprises:

combining

(a) a silane or a mixture of silanes of the formula R^1SiX_3, where each R^1 is independently selected from the group consisting of alkyl having 1 to 5 carbon atoms, where X is a independently a hydrolyzable group or a hydroxy group;

(b) a silane or a mixture of silanes of the formula $(R^2O)_cSiX_{(4-c)}$, where R^2 is independently selected from the group consisting of branched alkyl groups having 3 to 30 carbon atoms and branched substituted alkyl groups having 3 to 30 carbon atoms, c is from 1 to 3, X is a hydrolyzable group or a hydroxy group, silane (a) and silane (b) are present in a molar ration of silane (a) to silane (b) of 1:99 to 99:1; and

(c) water,

for a time and temperature sufficient to effect the formation of the siloxane resin.

6. The method as claimed in claim 5 further comprising a solvent.

7. The method as claimed in claim 5, wherein R^1 is methyl and R^2 is a tertiary alkyl group having 4 to 18 carbon atoms.

8. The method as claimed in claim 5, wherein R^1 is methyl and R^2 is t-butyl.

9. The method as claimed in claim 5, wherein the water is present in a range from 0.5 to 2.0 moles of water per mole of X in silane (a) and silane (c).

10. The method as claimed in claim 5, wherein the water is present in a range from 0.5 to 2.0 moles of water per mole of X in silane (a) and silane (c).

11. A method of forming an insoluble porous resin, which comprises:

(A) heating the siloxane resin of claim 1 for a time and temperature sufficient to effect curing of the siloxane resin,

(B) further heating the siloxane resin for a time and temperature sufficient to effect removal of the R^2O groups from the cured siloxane resin, thereby forming an insoluble porous resin.

12. The method as claimed in claim 11, where the heating in step (A) is from greater than 20°C to 350°C and the further heating in step (B) is from greater than 350°C to 600°C.

13. The method as claimed in claim 11, where the curing of the siloxane resin and removal of the R^2O groups from the cured siloxane resin is done in a single step.

14. The method as claimed in claim 11, wherein the insoluble porous resin has dielectric constant from 2.1 to 3.0, a porosity from 2 to 40 volume percent and a modulus from 1.9 to 20 GPa.

15. A method of forming an insoluble porous coating on a substrate comprising the steps of

(A) coating the substrate with a coating composition comprising a siloxane resin composition comprising $R^1SiO_{3/2}$ siloxane units, and $(R^2O)_bSiO_{(4-b)/2}$ siloxane units wherein R^1 is independently selected from the group consisting of alkyl having 1 to 5 carbon atoms and R^2 is independently selected from the group consisting of branched alkyl groups having 3 to 30 carbon atoms and substituted branched alkyl groups having 3 to 30 carbon atoms, b is from 1 to 3, the siloxane resin composition contains a molar ratio of $HSiO_{3/2}$ units to $(R^2O)_bSiO_{(4-b)/2}$ units of 1:99 to 99:1 and the sum of $R^1SiO_{3/2}$ units and $(R^2O)_bSiO_{(4-b)/2}$ units is at least 50 percent of the total siloxane units in the resin composition;

(B) heating the coated substrate for a time and temperature sufficient to effect curing of the coating composition, and

(C) further heating the coated substrate for a time and temperature sufficient to effect removal of the R^2O groups from the cured coating composition, thereby forming an insoluble porous coating on the substrate.

16. The method as claimed in claim 15, where the heating in step (B) is from greater than 20° to 350°C and the further heating in step (C) is from greater than 350° to 600°C.

17. The method as claimed in claim 15, where the curing and removal of the R^2O groups is done in a single step at a temperature within a range of greater than 20°C to 600°C.

18. The method as claimed in claim 17, where the removal of the R^2O groups is done at a temperature within a range of greater than 350°C to 600°C.

19. The method as claimed in claim 15, wherein the insoluble porous coating has a dielectric constant in the range of 2.1 to 3.0, a porosity of 2 to 40 volume percent, and a modulus in the range of 1.9 to 20 GPa.

20. An electronic substrate having an insoluble porous coating prepared by the method of claim 15.